IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A circuit arrangement for combining a modulator and an automatic gain control (AGC) amplifier comprising:

a modulator having inputs for receipt of signal inputs (IN+, IN-) containing information and means for converting the signal inputs into modulated output current signals (OP1, OP2, R3, R4; Q1, Q2, Q3, Q4), based upon a local oscillator reference signal (LO+, LO-); and

an automatic gain control (AGC) amplifier operatively connected to the modulated output current signals of the modulator and also connected to a supply voltage (Vcc), the AGC amplifier further having means for amplifying said output current signals for delivering the output current signals to one of two balanced loads (R1, R2; and corresponding opposite phase components); wherein the output current signals are re-used by the AGC amplifier.

2. (original) A circuit arrangement as defined in claim 1, wherein the AGC amplifier has means for controlling the amount of the amplified output current signals to present to either one of the two balanced loads, wherein this control of the amount of the amplified output current signals is dependent upon a control voltage (VP, VM) presented to the AGC amplifier.

3. (original) A circuit arrangement as defined in claim 2, wherein the modulator means for converting the signal inputs into modulated output current signals comprises:

means for converting the signal inputs from a voltage to a current (OP1, OP2, R3, R4) and a modulating circuit (Q_1, Q_2, Q_3, Q_4) that receives the output of the voltage to current converting means and the local oscillator reference signal (LO+, LO-) so as to modulate the current conversion of the signal inputs with the local oscillator reference signal.

4. (original) A circuit arrangement as defined in claim 1, wherein the modulator means for converting the signal inputs into modulated output current signals comprises:

means for converting the signal inputs from a voltage to a current (OP1, OP2, R3, R4) and a

modulating circuit (Q_1, Q_2, Q_3, Q_4) that receives the output of the voltage to current converting means and the local oscillator reference signal (LO+, LO-) so as to modulate the current conversion of the signal inputs with the local oscillator reference signal.

5. (original) A circuit arrangement as defined in claim 1, further comprising:

a non-inverting gain stage connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

6. (original) A circuit arrangement as defined in claim 1, further comprising:

an inverting gain stage having inputs connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

7. (original) A circuit arrangement as defined in claim 1, further comprising:

an inverting gain stage with common mode feedback having inputs connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

8. (currently amended) A circuit arrangement as defined in claim 1, wherein the modulator means for converting the signal inputs <u>containing information</u> into modulated output current signals comprises current mirrors with emitter transistors (Q1, Q2, Q3, Q4) and resistors (R3, R4) connected to the emitters of the transistors, wherein
the current mode input signals (IN+, IN-) are signals presented to a current to voltage converter including reference resistors (R_{ref1}, R_{ref2}) for presenting the signal inputs (IN+, IN-) to the modulator based upon the voltage drop across the respective reference resistors, the current to voltage converter with the associated reference resistors compensating for variations in resistance values of the modulator emitter resistors (R3, R4).

9. (original) A circuit arrangement as defined in claim 8, wherein the variation in percentage resistance values for the reference resistors (R_{ref1}, R_{ref2}) and the modulator emitter resistors (R3, R4) are substantially the same.

10. (original) A circuit arrangement as defined in claim 1, wherein the means for converting the signal inputs include operational amplifiers (OP1, OP2), wherein the inputs of the modulator are positive inputs to the operational amplifiers, and further wherein the circuit arrangement comprises:

local oscillator filters each connected to a negative input of one of the operational amplifiers associated with the modulator; and

noise filters each having an input connected to the output of one of the operational amplifiers (OP1, OP2) and having a filtered output connected to the modulator.

11. (original) A circuit arrangement as defined in claim 1, wherein the means for converting the signal inputs include operational amplifiers (OP1, OP2), wherein the inputs of the modulator are positive inputs to the operational amplifiers, and further the circuit arrangement comprises:

noise filters each connected to an output of one of the modulator operational amplifiers (OP1, OP2); and

a parallel input stage connected to the output of the noise filters, the parallel input stage comprising circuitry substantially the same as the modulator circuitry but without connection to the local oscillator reference signal.

12. (original) A transmitter for use in a mobile communications apparatus comprising:

a digital to analog (D/A) converter (20) for converting digital information into an analog signal input;

a modulator (24) operatively connected to the D/A converter (20) for modulating the signal inputs with a modulating signal so as to generate a modulated output signal;

an automatic gain control (AGC) amplifier (30) operatively connected to the modulator for controlling the gain of the modulated output signal; and

an amplifier (34) operatively connected to the output of the AGC amplifier for amplifying the gain controlled modulated output signal;

wherein the modulator (24) and the AGC amplifier (30) are combined to form a circuit arrangement (36), and

wherein the modulator has inputs for receipt of the signal inputs (IN+, IN-) and means for converting the signal inputs into modulated output current signals (OP1, OP2, R3, R4; Q1, Q2, Q3, Q4) based upon a local oscillator reference signal (LO+, LO-); and

wherein the AGC amplifier is operatively connected to the modulated output current signals of the modulator and also connected to a supply voltage (Vcc), the AGC amplifier further having means for amplifying said output current signals for delivering the output current signals to one of two balanced loads (R1, R2); wherein the output current signals are re-used by the AGC amplifier.

13. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, wherein the AGC amplifier has means for controlling the amount of the amplified output current signals to present to either one of the two balanced loads, wherein this control of the amount of the amplified output current signals is dependent upon a control voltage (VP, VM) presented to the AGC amplifier.

14. (original) A transmitter for use in a mobile communications apparatus, as defined in claim 13, wherein the modulator means for converting the signal inputs into modulated output current signals comprises:

means for converting the signal inputs from a voltage to a current (OP1, OP2, R3, R4) and a modulating circuit (Q_1, Q_2, Q_3, Q_4) that receives the output of the voltage to current converting means and the local oscillator reference signal (LO+, LO-) so as to modulate the current conversion of the signal inputs with the local oscillator reference signal.

15. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, wherein the modulator means for converting the signal inputs into modulated output current signals comprises:

means for converting the signal inputs from a voltage to a current (OP1, OP2, R3, R4) and a modulating circuit (Q_1, Q_2, Q_3, Q_4) that receives the output of the voltage to current converting means and the local oscillator reference signal (LO+,LO-) so as to modulate the current conversion of the signal inputs with the localoscillator reference signal.

16. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, further comprising:

a non-inverting gain stage connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

17. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, further comprising:

an inverting gain stage having inputs connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

18. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, further comprising:

an inverting gain stage with common mode feedback having inputs connected to the signal inputs (IN+, IN-) and having outputs connected to the inputs of the modulator.

19. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, wherein the modulator means for converting the signal inputs into modulated output current signals comprises current mirrors with emitter transistors (Q1, Q2, Q3, Q4) and resistors (R3, R4) connected to the emitters of the transistors, wherein the current mode signal inputs (IN+, IN-) are presented to a current to voltage converter including reference resistors (R_{ref1}, R_{ref2}) for presenting the signal inputs (IN+, IN-) to the modulator based upon the voltage drop across the respective reference resistors, the current to voltage converter with the associated reference resistors compensating for variations in resistance values of the modulator emitter resistors (R3, R4).

20. (original) A transmitter for use in a mobile communications apparatus as defined in claim 19, wherein the variation in percentage resistance values for the reference resistors (R_{ref1}, R_{ref2}) and the modulator emitter resistors (R3, R4) are substantially the same.

21. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, wherein the means for converting the signal inputs include operational amplifiers (OP1, OP2), wherein the inputs of the modulator are positive inputs to the operational amplifiers, and further wherein the circuit arrangement comprises:

local oscillator filters each connected to a negative input of one of the operational amplifiers associated with the modulator; and

noise filters each having an input connected to the output of one of the operational amplifiers (OP1, OP2) and having a filtered output connected to the modulator.

22. (original) A transmitter for use in a mobile communications apparatus as defined in claim 12, wherein the means for converting the signal inputs include operational amplifiers (OP1, OP2), wherein the inputs of the modulator are positive inputs to the operational amplifiers, and further the circuit arrangement comprises:

noise filters each connected to an output of one of the modulator operational amplifiers (OP1, OP2); and

a parallel input stage connected to the output of the noise filters, the parallel input stage comprising circuitry substantially the same as the modulator circuitry but without connection to the local oscillator reference signal.